In the Claims:

1. (Original) A method for forming a multilayer circuit substrate, comprising:

providing a dielectric base substrate;

forming conductors on the base substrate;

forming sacrificial structures on the base substrate and conductors to define areas to be protected from deposition of a dielectric layer;

vacuum depositing a dielectric thin film on the base substrate, the conductors and the sacrificial structures; and

removing the sacrificial structures to leave a patterned deposited dielectric thin film on the conductors and the base substrate.

2. (Original) The method claimed in claim 1, wherein forming the conductors comprises:

depositing a blanket layer of a conductor material; and

patterning the blanket layer of conductor material.

3. (Original) The method claimed in claim 2, wherein the blanket layer of conductor material is formed by physical vapor deposition.

4. (Original) The method claimed in claim 2, wherein the blanket layer of conductor material is formed by evaporation.

5. (Original) The method claimed in claim 2, wherein the blanket layer of conductor material is formed by chemical vapor deposition.

6. (Original) The method claimed in claim 2, wherein the blanket layer of conductor material is patterned by a photoresist lift-off process.

7. (Original) The method claimed in claim 2, wherein the blanket layer of conductor material is patterned by a chemical etching process.

8. (Original) The method claimed in claim 1, wherein the conductors are formed by a shadow mask patterning process.

9. (Original) The method claimed in claim 1, wherein the conductors are formed by a screen printing process.

10. (Original) The method claimed in claim 1, wherein the sacrificial structures are formed by a shadow mask deposition process.

11. (Original) The method claimed in claim 10, wherein the sacrificial structures are formed of aluminum and are removed using a ferric chloride solution.

12. (Original) The method claimed in claim 10, wherein the shadow mask deposition process utilizes a shadow mask having laser drilled via holes.

13. (Original) The method claimed in claim 1, further comprising mounting a circuit component on the deposited dielectric layer.

14. (Original) The method claimed in claim 1, wherein the base substrate comprises a hermetic via, and

wherein one of the conductors is formed in contact the hermetic via.

15. (Original) The method claimed in claim 1, wherein the base substrate comprises a hermetic via, and wherein providing the base substrate comprises:

forming a via hole in the base substrate;

respectively forming multiple layers of conductive ink on sidewalls of the via hole;

filling a space between said sidewalls with conductive ink; and

sintering the conductive material in the via hole.

16. (Original) The method claimed in claim 15, wherein forming said multiple layers comprises:

introducing a conductive ink to the via hole;

applying a vacuum to the via hole to form a layer of said conductive ink on sidewalls of the hole; and

repeating said introducing and said applying to form said multiple layers of conductive ink on the sidewalls.

17. (Original) The method claimed in claim 16, wherein the conductive ink is introduced to the via hole by screen printing.

18. (Original) The method claimed in claim 16, wherein applying the vacuum eliminates voids in the conductive ink introduced into the via hole.

19. (Original) The method claimed in claim 16, wherein the vacuum is applied to one end of the via hole

20. (Original) The method claimed in claim 16, wherein the conductive ink used to fill the space between the sidewalls is less dilute than the conductive ink used to form said multiple layers.

21. (Original) The method claimed in claim 16, wherein applying the vacuum is followed by thermal processing to remove solvent and organic binder from the conductive ink.

22. (Original) The method claimed in claim 15, wherein providing the base substrate further comprises removing residual conductive material from surfaces of the base substrate.

23. (Original) The method claimed in claim 15, wherein the via hole is formed by laser drilling.

24. (Original) The method claimed in claim 23, wherein said laser drilling is followed by annealing to smooth the sidewalls of the via hole.

25. (Original) The method claimed in claim 1, wherein the base substrate comprises a hermetic via, and

wherein the method further comprises:

forming a conductor on the base substrate in contact with the hermetic via; and

forming a cap over the conductor and the hermetic via.

26. (Original) The method claimed in claim 25, wherein the cap is formed by a shadow mask deposition technique.

27.-31. (Cancelled)

32. (New) A method for forming a sensor having a multilayer circuit substrate, comprising:

providing a base substrate having first and second opposite-facing major surfaces;

forming conductors over the first major surface of the base substrate;

forming sacrificial structures over the first major surface of the base substrate and conductors to define areas to be protected from deposition of a dielectric layer;

vacuum depositing a dielectric thin film on the base substrate, the conductors and the sacrificial structures; and

removing the sacrificial structures to leave a patterned deposited dielectric film on the conductors and the base substrate;

mounting at least a portion of an electronic sensor circuit over the first major surface of the base substrate, conductors and patterned deposited dielectric film.

33. (New) The method claimed in claim 32, further comprising forming at least one sensor electrode over the second major surface of the base substrate.

34. (New) The method claimed in claim 33, further comprising forming at least one conductive via extending from the first major surface to the second major surface of the substrate and wherein mounting at least a portion of an electronic sensor circuit comprises, electrically connecting the electronic sensor circuit to the at least one sensor electrode through the at least one conductive via.

35. (New) The method claimed in claim 34, wherein forming at least one conductive via comprises forming at least one hermetically sealed, conductive via extending from the first major surface to the second major surface of the substrate.

36. (New) The method claimed in claim 32, further comprising forming a plurality of hermetically sealed, conductive vias, each via extending from the first major surface to the second major surface of the substrate.

37. (New) The method claimed in claim 36, further comprising forming a plurality of sensor electrode over the second major surface of the base substrate in electrical communication with the conductive vias.

38. (New) The method claimed in claim 32, wherein mounting at least a portion of an electronic circuit comprises mounting at least a portion of an electronic circuit configured to perform oxygen or blood glucose measurements.

39. (New) The method claimed in claim 32, further comprising forming at least one sensor electrode over the second major surface of the base substrate, wherein mounting at least a portion of an electronic circuit comprises mounting at least a portion of an electronic circuit configured to perform oxygen or blood glucose measurements using signals applied to the at least one sensor electrodes.

40. (New) The method claimed in claim 32, further comprising:

forming at least one hermetically sealed, conductive via extending from the first major surface to the second major surface of the substrate; and

forming at least one sensor electrode over the second major surface of the base substrate;

wherein mounting at least a portion of an electronic circuit comprises mounting at least a portion of an electronic circuit configured to perform sensing operations in electrical communication with the at least one sensor electrode and configured to perform sensing operations using signals applied to the at least one sensor electrodes.

41. (New) The method claimed in claim 32, wherein forming the conductors comprises:

depositing a blanket layer of a conductor material; and

patterning the blanket layer of conductor material.

42. (New) The method claimed in claim 41, wherein the blanket layer of conductor material is formed by at least one of the group consisting essentially of: physical vapor deposition, evaporation and chemical vapor deposition.

43. (New) The method claimed in claim 41, wherein the blanket layer of conductor material is patterned by at least one of the group consisting essentially of a: photoresist lift-off process, chemical etching process, and shadow mask patterning process.

44. (New) The method claimed in claim 32, wherein the sacrificial structures are formed of aluminum and are removed using a ferric chloride solution.

45. (New) The method claimed in claim 32, wherein the base substrate comprises a hermetic via, and wherein providing the base substrate comprises:

forming a via hole in the base substrate;

respectively forming multiple layers of conductive ink on sidewalls of the via hole;

filling a space between said sidewalls with conductive ink; and

sintering the conductive material in the via hole.

46. (New) The method claimed in claim 15, wherein forming said multiple layers comprises:

introducing a conductive ink to the via hole;

applying a vacuum to the via hole to form a layer of said conductive ink on sidewalls of the hole; and

repeating said introducing and said applying to form said multiple layers of conductive ink on the sidewalls.

47. (New) The method claimed in claim 45, wherein the via hole is formed by laser drilling.

48. (New) The method claimed in claim 32, wherein the base substrate comprises a hermetic via, and

wherein the method further comprises:

forming a conductor on the base substrate in contact with the hermetic via; and

forming a cap over the conductor and the hermetic via.